

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN**

UNITED STATES OF AMERICA,

Plaintiff,

And

NATURAL RESOURCES DEFENSE
COUNCIL, INC. AND SIERRA CLUB,

Intervenor-Plaintiffs,

v.

DTE ENERGY COMPANY AND
DETROIT EDISON COMPANY,

Defendants.

Civil Action No.
2:10-cv-13101-BAF-RSW

Judge Bernard A. Friedman

Magistrate Judge R. Steven Whalen

**DEFENDANTS' MOTION IN LIMINE TO EXCLUDE
THE OPINIONS OF EDWARD ROTHMAN**

Pursuant to the scheduling order of the Court [Doc. No. 82] and Federal Rule of Evidence 703, Defendants DTE Energy Company and Detroit Edison Company (collectively “Detroit Edison”) respectfully move *in limine* for the exclusion of the opinions of Edward Rothman. In accordance with Local Rule 7.1(a), the parties conferred on the nature of this motion and its legal basis, but were unable to reach a concurrence in the relief sought.

In support of this motion, Detroit Edison states as follows:

1. Rothman is a statistician who constructed a “simple model” for this case, which he uses to predict the relationship between increases in availability at Monroe Unit 2 and its

generation. Based on this model, he opines that an increase in availability at Monroe Unit 2 will be expected to result in an actual increase in generation.

2. Under FRE 702 and *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993), and Sixth Circuit case law, Rothman's opinions must be relevant to – or “fit” – the issues in the case in order to be admissible.

3. Because Rothman's “simple model” is highly uncertain and not statistically significant, it cannot predict with the necessary accuracy whether an increase in availability at Monroe Unit 2 will result in an actual increase in generation. Thus, Rothman's “simple model” does not answer any question relevant to this case.

4. Furthermore, as set forth in Defendants' Brief in Support of Motion for Summary Judgment Based on the 2002 New Source Review (“NSR”) Reform Rules [Doc. No. 107], the Michigan NSR Rules set forth specific requirements. Neither Rothman's “simple model” nor his opinions based on it are relevant to whether Detroit Edison complied with those requirements; therefore, Rothman's opinions are not admissible in this case.

For these reasons, as more fully set forth in Detroit Edison's supporting memorandum of law, the Court should exclude the opinions of Edward Rothman.

Respectfully submitted this 5th day of August, 2011.

Matthew J. Lund (P48632)
PEPPER HAMILTON LLP
100 Renaissance Center, 36th Floor
Detroit, Michigan 48243
lundm@pepperlaw.com
(313) 393-7370

Michael J. Solo (P57092)
DTE ENERGY
One Energy Plaza

/s/ Harry M. Johnson, III
F. William Brownell
brownell@hunton.com
Mark B. Bierbower
mbierbower@hunton.com
Makram B. Jaber
mjaber@hunton.com
Hunton & Williams LLP
2200 Pennsylvania Avenue, NW
Washington, D.C. 20037
(202) 955-1500

Detroit, Michigan 48226
solom@dteenergy.com
(313) 235-9512

Harry M. Johnson, III
pjohnson@hunton.com
Hunton & Williams
951 E. Byrd Street
Richmond, Virginia 23219
(804) 788-8784

Counsel for Defendants

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing **DEFENDANTS' MOTION IN LIMINE TO EXCLUDE THE OPINIONS OF EDWARD ROTHMAN** was electronically filed with the Clerk of Court using the CM/ECF system, which will automatically send email notification of such filing to the following attorneys of record as follows:

Ellen E. Christensen
U.S. Attorney's Office
211 W. Fort Street
Suite 2001
Detroit, MI 48226
313-226-9100
Email: ellen.christensen@usdoj.gov

James A. Lofton
Thomas Benson
Justin A. Savage
Kristin M. Furrie
Elias L. Quinn
James W. Beers, Jr.
U.S. Department of Justice
Environmental and Natural Resource Div.
Ben Franklin Station
P.O. Box 7611
Washington, DC 20044
202-514-5261
Email: thomas.benson@usdoj.gov
justin.savage@usdoj.gov
kristin.furrie@usdoj.gov
jim.lofton@usdoj.gov
elias.quinn@usdoj.gov
james.beers@usdoj.gov

Holly Bressett
Sierra Club Environmental Law Program
85 Second St., 2nd Floor
San Francisco, CA 94105
Phone: (415) 977-5646
Email: Holly.Bressett@sierraclub.org

This 5th day of August, 2011.

/s/ Harry M. Johnson, III

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN

UNITED STATES OF AMERICA,

Plaintiff,

and

NATURAL RESOURCES DEFENSE
COUNCIL, INC. AND SIERRA CLUB,

Intervenor-Plaintiffs,

v.

DTE ENERGY COMPANY AND
DETROIT EDISON COMPANY,

Defendants.

Civil Action No.
2:10-cv-13101-BAF-RSW

Judge Bernard A. Friedman

Magistrate Judge R. Steven Whalen

**DEFENDANTS' MEMORANDUM OF LAW IN SUPPORT OF MOTION *IN LIMINE* TO
EXCLUDE THE OPINIONS OF EDWARD ROTHSCHILD**

TABLE OF CONTENTS

CONTROLLING OR MOST APPROPRIATE AUTHORITY	iii
STATEMENT OF ISSUES PRESENTED.....	v
PRELIMINARY STATEMENT.....	1
BACKGROUND.....	2
I. Overview Of Rothman's Opinions And The Rothman Model.....	2
II. The Imprecision of the Rothman Model as Applied in This Case.	6
ARGUMENT	9
III. Relevance and "Fit" are Prerequisites for Admissibility of an Expert's Opinions.	9
IV. Rothman's Opinions Do Not "Fit" the Emissions Increase Issue in This Case.	10
V. Rothman's Opinions Do Not "Fit" Any Issue Under the 2002 NSR Reform Rules.	11
CONCLUSION	13

CONTROLLING OR MOST APPROPRIATE AUTHORITY

FEDERAL CASES

<i>Coates v. Johnson & Johnson</i> , 756 F.2d 524 (7th Cir. 1985).....	8
<i>Concord Boat Corp. v. Brunswick Corp.</i> , 207 F.3d 1039 (8th Cir. 2000).....	12
<i>Daubert v. Merrell Dow Pharms., Inc.</i> , 509 U.S. 579 (1993)	9, 13
<i>EEOC v. Ethan Allen, Inc.</i> , 259 F. Supp. 2d 625 (N.D. Ohio 2003).....	11
<i>Ford v. Seabold</i> , 841 F.2d 677 (6th Cir. 1988).....	8
<i>General Elec. Co. v. Joiner</i> , 522 U.S. 136 (1997)	10, 11
<i>Hill v. K-Mart Corp.</i> , 699 F.2d 776 (5th Cir. 1983).....	8
<i>Kurncz v. Honda N. Am., Inc.</i> , 166 F.R.D. 386 (W.D. Mich. 1996)	9
<i>Mallettier v. Dooney & Bourke, Inc.</i> , 525 F. Supp. 2d 558 (S.D.N.Y. 2007).....	9
<i>Novo Nordisk A/S v. Caraco Pharm. Labs.</i> , --- F. Supp. 2d ---, 2011 WL 163996 (E.D. Mich. Jan. 19, 2011)	11
<i>Pride v. BIC Corp.</i> , 218 F.3d 566 (6th Cir. 2000)	9, 10
<i>Sheehan v. Daily Racing Form, Inc.</i> , 104 F.3d 940 (7th Cir. 1997)	1
<i>Sigler v. Am. Honda Motor Co.</i> , 532 F.3d 469 (6th Cir. 2008)	10
<i>Smelser v. Norfolk S. Ry. Co.</i> , 105 F.3d 299 (6th Cir. 1997), cert. denied, 522 U.S. 817 (1997)	10
<i>United States v. Downing</i> , 753 F.2d 1224 (3d Cir. 1985)	13
<i>United States v. Valencia</i> , 600 F.3d 389 (5th Cir. 2010), cert. denied, 131 S. Ct. 285 (2010)	10
<i>Williams v. Ford Motor Co.</i> , 187 F.3d 533 (6th Cir. 1999).....	8

FEDERAL REGISTER

67 Fed. Reg. 80,186 (Dec. 31, 2002).....	6
75 Fed. Reg. 31,896 (June 4, 2010).....	4

STATE REGULATIONS

MICH. ADMIN. CODE R. 336.2801(ll)(ii)(A)	12
MICH. ADMIN. CODE R. 336.2801(qq)(i).....	5
MICH. ADMIN. CODE R. 336.2818(3)	12

MISCELLANEOUS

FED. R. EVID. 702.....	9, 12
------------------------	-------

Reference Manual on Scientific Evidence (Fed. Jud. Ctr. 2d ed. 2000), available
at
http://www.fjc.gov/public/home.nsf/autoframe?openform&url_l=/public/home.nsf/inavgeneral?openpage&url_r=/public/home.nsf/pages/610 1, 4, 5, 6, 8

STATEMENT OF ISSUES PRESENTED

1. Should this Court exclude the opinions of Plaintiff's statistician, Edward Rothman, because his proffered "simple model" has such a high *admitted* uncertainty in predicting actual future generation at Monroe Unit 2 (i.e., the model's "predictive interval") that the model fails to satisfy the minimum thresholds for admission of statistical evidence and cannot possibly assist the Court in deciding any fact in issue?

Defendants' answer: Yes.

2. Should this Court also exclude Rothman's opinions on grounds that his statistical model to predict generation at Monroe Unit 2 is irrelevant because Detroit Edison's liability under the relevant NSR rules is determined by *actual* emissions, not on a *post hoc* criticism of Detroit Edison's preconstruction projection of emissions?

Defendants' answer: Yes.

PRELIMINARY STATEMENT

Defendants DTE Energy Company and Detroit Edison Company (collectively “Detroit Edison”) submit this Memorandum in Support of their Motion *In Limine* to Exclude the Opinions of Edward Rothman.

Rothman is a statistician who constructed a “simple model” for this case. Deposition of Edward Rothman (July 20, 2011) (“Rothman Dep.”) at 156-57 (attached as Ex. 1). He uses this model to predict the relationship between increases in availability of Monroe Unit 2 and its generation.¹ Based on his model (“the Rothman model”), he offers the opinion that he “expect[s]” increases in generation to accompany increased availability. *Id.* at 125-30. But, his model is far too imprecise to provide any meaningful assistance in this case. While his model will give a “predicted” generation, he acknowledges its range of accuracy (the “predictive interval”) is plus-or-minus roughly 12%. This means that the model has the ability to predict generation only within a range that is 24% wide. As explained in more detail below, the Rothman model will therefore incorrectly predict increases in generation at Monroe Unit 2 a very high percentage of time. That is, its error rate is extremely and demonstrably high, far beyond what is accepted in the field of statistics or by courts evaluating expert statistical evidence. It should not be admitted here.

¹ Rothman is careful **not** to say that an increase in availability **will cause** an increase in generation. Rothman Dep. at 129-30. To assert otherwise would violate a basic tenet of statistics. *See Reference Manual on Scientific Evidence* at 184 (Fed. Jud. Ctr. 2d ed. 2000), available at http://www.fjc.gov/public/home.nsf/autoframe?openform&url_l=/public/home.nsf/inavgeneral?openpage&url_r=/public/home.nsf/pages/610 (“A correlation between two variables does not imply that one event causes the second.”). As the Seventh Circuit has noted, an expert’s “equating a simple statistical correlation to a causal relation...indicates a failure to exercise the degree of care that a statistician would use in his scientific work, outside of the context of litigation.” *Sheehan v. Daily Racing Form, Inc.*, 104 F.3d 940, 942 (7th Cir. 1997).

Rothman's opinions should be excluded for another reason. His model offers nothing more than an imprecise statistical prediction of future generation. The Michigan New Source Review ("NSR") rules, however, prescribe how a source such as Monroe Unit 2 complies with NSR. To establish a violation of those rules, Plaintiff must prove that Monroe Unit 2's *actual* emissions reflect an increase due to the projects at issue. The NSR rules do not provide for second-guessing of Detroit Edison's original projection as the Rothman model purports to do. Instead, analysis of Monroe Unit 2's actual emissions will determine whether a violation has occurred. Consequently, the Rothman model does not "fit" the governing law, and must be excluded as irrelevant.

BACKGROUND

I. Overview Of Rothman's Opinions And The Rothman Model

Rothman is a statistician who teaches at the University of Michigan. Detroit Edison does not challenge his qualifications as a statistician nor his ability to use statistical techniques to create regression models.² Detroit Edison does, however, challenge the ability of the Rothman model to provide meaningful predictions *in this case*. In other words, the analytical gap between the model's predictive capabilities and the relevant issues in this case is too wide.

Rothman's methodology is straightforward. He performed a regression analysis on twenty-five years of monthly data from Monroe Unit 2 to establish a correlation between the availability of the unit (represented as Equivalent Availability Factor or "EAF") and the generation of the unit (represented as Net Capacity Factor or "NCF").³ Expert Report of

² While Detroit Edison may disagree with some of Rothman's selection and application of statistical techniques, such disagreement is not the basis of this motion.

³ "NCF" represents the percentage of a unit's maximum generation that a unit actually generates. Thus, a unit that generates 400MW when it could have generated 500MW if it were operating at maximum capacity every hour of the relevant period would have a NCF of 80%.

Edward Rothman (Apr. 22, 2011) (“Rothman Report”) at 2 (attached as Ex. 2). He found that the two measures are correlated. *Id.* at 3-4. According to the Rothman model, there is a statistical association ***generally and on average*** between availability and generation. *See id.* at 5 (scatter plot of actual data).

Although his model purports to predict generation, Rothman did not consider the impacts of key variables that influence how much electricity a specific unit will generate, such as (a) the demand for electricity; (b) competition with Monroe Unit 2; (c) fuel prices; (d) the prices of competing fuels such as natural gas; (e) the growing market for renewable energy; (f) the price of NO_x and SO₂ allowances; or (g) the price of electricity. Rothman Dep. at 131-36. Indeed, Rothman did not consider ***any*** market factors of ***any*** kind to predict how much electricity Monroe Unit 2 would generate. *Id.* at 132. Instead, Rothman looked only at Monroe Unit 2’s availability.

Perhaps because the Rothman model disregards all market factors in trying to predict generation, its ability to predict Monroe Unit 2’s generation with any degree of accuracy is very limited.⁴ After his deposition, Rothman produced calculations showing his model’s “prediction

⁴ In contrast to the “simple” Rothman model, utilities commonly use sophisticated models such as PROMOD when seeking accurate projections of their output and its cost. Instead of a single variable such as availability, PROMOD considers hundreds, if not thousands, of variables for its projections. Detroit Edison uses PROMOD, and Plaintiff’s expert Philip Hayet himself is using PROMOD as the basis for his opinions in this case. Hayet has described PROMOD as follows:

PROMOD...found success due to its advanced probabilistic simulation algorithm and the speed with which it was able to perform its analyses. PROMOD...is widely used today for electric market simulation capable to [sic] evaluating markets such as MISO and PJM. PROMOD incorporates extensive detail in representing generating unit operating characteristics, transmission grid topology and constraints, unit commitment/operating conditions, and market system operations.... Inputs to PROMOD

intervals.” *See EROTH_DTE000008* (“Confidence and Predictive Intervals DTW.XLSX”) (hereafter “Rothman Spreadsheet”) (attached as Ex. 4). Prediction intervals are functions of the “standard error” of a model. *See Rothman Spreadsheet* at rows 9, 13, 15; *see also Reference Manual on Scientific Evidence* at 174 (standard error is also called “standard deviation”). As EPA has acknowledged, “prediction intervals” represent “estimates [of] what future values will be, based upon present or past background samples taken.” 75 Fed. Reg. 31,896, 31,905 (June 4, 2010) (EPA’s proposed rule for National Emissions Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Industrial Boilers). The *Reference Manual on Scientific Evidence* discusses prediction intervals in the context of a model’s ability to make statistically significant forecasts. *Reference Manual on Scientific Evidence* at 219-20. Thus, Rothman’s prediction intervals reflect the *range* of generation that his model can predict in light of variation and uncertainty. *See Rothman Dep.* at 166-67 (the model’s “standard error of the estimate” is “a measure of the variability about the expected generation number at a particular EAF value. And when those numbers are large, that’s an indication that we’re less certain about the expected value of NCF at a particular EAF level.”).

The Rothman model has wide prediction intervals at the points relevant to this case:

- When availability is 70%, the prediction interval for generation is between 49.94% and 73.26% of Monroe Unit 2’s maximum capacity.

include: Generating Unit Characteristics (capacity, forced outage rates, heat rates, minimum downtimes, must run status, operating reserve capability, planned outages, emissions rates, etc), Fuel Characteristics (heat content, fuel cost, fuel limits), Load Forecast (8760 hourly forecast for each study year), Market price representation (market capacity limit, hourly market price for both purchases and sales), Transactions – (capacity, energy, capacity cost, energy cost), [and] Emissions allowance costs.

Expert Report of Philip Hayet (Apr. 22, 2011) (“Hayet Report”) at 5 (attached as Exhibit 3).

- When availability is 80%, the prediction interval for generation is between 58.74% and 82.06% of Monroe Unit 2's maximum capacity.
- When availability is 90%, the prediction interval for generation is between 66.83% and 91.57% of Monroe Unit 2's maximum capacity.

See Rothman Spreadsheet at rows 9-24. What does this mean? It means that the Rothman model will be able to predict Monroe Unit 2 generation only within a range of about 24% at any given availability. To put this in context, one of Plaintiff's other experts opines that a change in availability of only 0.24% will cause a significant increase in emissions. *See* Rebuttal and Supplemental Expert Report of Philip Hayet (July 5, 2011 revised) ("Hayet Rebuttal and Suppl. Report") at 13 (attached as Ex. 5). Indeed, Rothman's range of generation represents differences in thousands of tons of emissions, when the relevant significance level in this case is only 40 tons for SO₂ and NOx. *See* MICH. ADMIN. CODE R. 336.2801(qq)(i). Consequently, the Rothman model is not nearly precise enough to predict *relevant* changes in generation.⁵ The *Reference Manual on Scientific Evidence* itself illustrates this very point with a specific example where a prediction interval is so large that the model is considered ineffective in forecasting. *Reference Manual on Scientific Evidence* at 220 (trying to use work experience alone to predict a person's salary produces such a wide prediction interval, *i.e.*, range of possible salaries, that "the estimated model does not explain salaries effectively.").

⁵ The Rothman model is predicated on monthly data from Monroe Unit 2, while the NSR rules are concerned with annual emissions. As Mr. King points out, "[t]he problems that are evident in Dr. Rothman's monthly analysis are even more pronounced for annual data." Surrebuttal Expert Report of Mike King (Aug. 1, 2011) ("King Surrebuttal Report") at 5 n.11 (attached as Ex. 6). This can be observed graphically in Rothman's report itself, where the "scatter" of the annual data is even more variable than the hourly data. *Compare* Rothman Report at 6 (scatter plot of annual data) with *id.* at 5 (scatter plot of hourly data).

II. The Imprecision of the Rothman Model as Applied in This Case.

Plaintiff seeks to prove that the tube projects would increase availability at Monroe Unit 2 and that Detroit Edison should have known that increased availability would result in increased generation and emissions.⁶ Plaintiff is offering Rothman to try to show that, statistically, increases in future availability *will* lead to increases in future generation at Monroe Unit 2. But, the precision of the Rothman model is extremely low and, hence, its error rate is unacceptably high. The model will incorrectly “predict” an increase a very high percentage of the time.⁷

This can be shown two ways. The first is common sense and the second is statistical. Common sense dictates that if the model’s predicted range of generation includes both increases *and* decreases when availability increases, the model is not proving (or even tending to prove) that increased availability will in fact lead to increased generation. For instance, when Monroe Unit 2 availability increases by 1% from 80% to 81%, the Rothman model predicts that *actual* generation may range anywhere from about 60% to roughly 83% of Monroe Unit 2’s capacity. This range would encompass both large increases and large decreases, as well as small increases and small decreases. The model is utterly unable to predict with any certainty that generation will *in fact* increase, as opposed to decrease or remain unchanged. *See also* King Surrebuttal Report at 6 (“So, the data that Dr. Rothman used to estimate his regression model show many

⁶ Detroit Edison vigorously disagrees that liability can be determined in this way under the 2002 NSR Reform Rules, 67 Fed. Reg. 80,186 (Dec. 31, 2002).

⁷ While Rothman asserts that his model has a high statistical significance (Rothman Report at 4), this does not mean that the model is sufficiently precise in this case. As the *Reference Manual on Scientific Evidence* teaches in its chapter on Statistics, “[a] high confidence level alone means very little.” *Reference Manual on Scientific Evidence* at 119. *See also id.* at 119 n.119 (“*Statements about the confidence in a sample without any mention of the interval estimate are practically meaningless.*”) (emphasis added).

examples where an increase in EAF does not correspond to an increase in NCF -- in fact, there are many examples where NCF decreased while EAF increased.”).

It is important to remember that this case involves relatively small alleged changes in availability. Plaintiff alleges that the tube projects at issue should have increased Monroe Unit 2’s availability by anywhere from 1.2% to 4.9%. *See id.* at 8 (Table III-1).⁸ Can the Rothman model accurately predict whether generation will go up or down when availability increases by those small increments? No, it cannot. For instance, during the May 2005-April 2007 baseline, availability of Monroe Unit 2 was 85.5% and its generation (NCF) was 72.2%. King Dec. at 14 (Doc. No. 46-11). Now, if availability goes up to 90% (a 4.5% increase), the Rothman model will predict generation in a range between approximately 66.83% and 91.57%.⁹ *See* Rothman Spreadsheet at row 21. As one can plainly see, the Rothman model cannot tell us whether generation will in fact be above the baseline or below it. The predicted range covers both increases and decreases, and the model’s error rate will be high.¹⁰

Standard statistical techniques lead to the same conclusion. The concept of “statistical significance” typically determines whether a statistical model meets the test for admissibility.

⁸ Detroit Edison disputes that the tube projects would necessarily increase availability of Monroe Unit 2, but solely for purposes of this motion, the Court may assume that increases in availability would occur. Even if availability does increase, the Rothman model is unable to predict an actual increase in **generation** will occur.

⁹ This prediction interval reveals another anomaly in Rothman’s simplistic statistical approach to the complex problem of trying to predict generation at Monroe Unit 2. Even though common sense teaches that generation cannot exceed availability (*i.e.*, Monroe Unit 2 cannot generate electricity when it is unavailable), the Rothman model’s prediction interval at 90% EAF includes generation at greater than 90%.

¹⁰ Indeed, if the Rothman model had been used to “predict” generation during the May 2005-April 2007 baseline, it would have overpredicted generation by 3%. The model would have predicted NCF to be 75.2% (*see* Rothman Report at 4 giving equation as “Predicted NCF = .88 * EAF”), when actual observed generation was only 72.2%. While this 3% overestimate falls well within the model’s “standard error,” it confirms the model’s lack of precision.

Using standard techniques (hypothesis testing, p-values, and 90% or 95% statistical significance), King demonstrates that *the Rothman model cannot predict increases or decreases within the accepted levels of statistical significance*. King Surrebuttal Report at 7-10. Based on the prediction intervals, King calculated the probability that the Rothman model would incorrectly predict an increase in generation when considering the alleged changes in EAF in this case and the baselines relevant in this case. *Id.* The results for each baseline period show that the Rothman model incorrectly predicts an increase so often that the prediction lacks statistical significance. *Id.* at 8-9, Figure III-1 (probabilities of incorrect prediction) and Figure III-2 (corresponding p-values ranging from 0.26 to 0.45).¹¹ The standard for statistical significance in science is typically a p-value less than 0.05 or 0.10. *Id.* at 8; *Reference Manual on Scientific Evidence* at 168, 394; *Ford v. Seabold*, 841 F.2d 677, 684 (6th Cir. 1988) (“probability value below 0.05 is ‘generally considered to be statistically significant, i.e., when there is less than a 5% probability that the disparity was due to chance’”) (quoting *Coates v. Johnson & Johnson*, 756 F.2d 524, 537 (7th Cir. 1985)). Cf. *Williams v. Ford Motor Co.*, 187 F.3d 533, 546 & n.13 (6th Cir. 1999) (finding that district court, Friedman, J., correctly relied on employer’s study that complied with federal Title VII regulations requiring statistical significance level of 0.05 or less). This lack of statistical significance is a fatal flaw in Rothman’s analysis. See, e.g., *Hill v. K-Mart Corp.*, 699 F.2d 776, 780 n.7 (5th Cir. 1983) (“statistical significance” is a critical concept that “gives meaning to bare numbers”).

¹¹ P-values are described in detail in the *Reference Manual on Scientific Evidence* starting at page 121. While statistical probability values and p-values are important in determining the admissibility of statistical evidence, they cannot be equated with burdens of proof such as “preponderance of the evidence” or “more likely than not.” *Id.* at 358 n.67 (describing the “common error made by lawyers, judges and academics” to equate the probabilities in statistical studies to legal burdens of proof).

ARGUMENT

III. Relevance and “Fit” are Prerequisites for Admissibility of an Expert’s Opinions.

Rule 702 of the Federal Rules of Evidence (“FRE”) governs the admissibility of expert testimony:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Relevance to the issue at hand is a key requirement. The requirement that the expert testimony “assist the trier of fact to understand the evidence or to determine a fact in issue” means that the testimony must be relevant to the case. *Daubert v. Merrell Dow Pharmas., Inc.*, 509 U.S. 579, 591 (1993) (“The consideration has been aptly described … as … ‘fit.’”). The Sixth Circuit has explained: “[t]his requirement has been interpreted to mean that scientific testimony must ‘fit’ the facts of the case, that is, there must be a connection between the scientific research or test result being offered and the disputed factual issues in the case in which the expert will testify.” *Pride v. BIC Corp.*, 218 F.3d 566, 578 (6th Cir. 2000).

A district court must take into consideration various factors including error rates as part of its review of “whether [the expert’s] reasoning or methodology properly can be applied to the facts in issue.” *Daubert*, 509 U.S. at 593. Even if an opinion is reliable and relevant in one context, it may not be in another context. *See, e.g., Kurncz v. Honda N. Am., Inc.*, 166 F.R.D. 386, 390 (W.D. Mich. 1996) (excluding expert’s opinion and stating “[w]hile the statistical approach may be useful for writing regulations, courts have found it rather ‘callous and unhelpful’ for jurors”); *Malletier v. Dooney & Bourke, Inc.*, 525 F. Supp. 2d 558, 572, 652 (S.D.

N.Y. 2007) (excluding study that did not “fit” with the substantive law relevant to liability, even assuming the study were reliable); *see also Smelser v. Norfolk S. Ry. Co.*, 105 F.3d 299, 303 (6th Cir. 1997), *cert. denied*, 522 U.S. 817 (1997) (court must “ensure that the proposed expert testimony is relevant to the task at hand.”). Accordingly, a court may exclude “opinion evidence which is connected to existing data only by the *ipse dixit* of the expert” where “there is simply too great an analytical gap between the data and the opinion proffered.” *General Elec. v. Joiner*, 522 U.S. 136, 146 (1997). “In short, under *Daubert* and its progeny, a party proffering expert testimony must show by a ‘preponderance of proof’ that the expert whose testimony is being offered is qualified and will testify to scientific knowledge that will assist the trier of fact in understanding and disposing of relevant issues.” *Sigler v. Am. Honda Motor Co.*, 532 F.3d 469, 478 (6th Cir. 2008) (quoting *Pride*, 218 F.3d at 578) (internal quotations omitted).

The Rothman model does not meet these standards for admissibility.

IV. Rothman’s Opinions Do Not “Fit” the Emissions Increase Issue in This Case.

To ascertain whether the Rothman model “fits” the task at hand, one must first examine the relevant issue. For purposes of analyzing Rothman’s opinions, the relevant issue is whether a specific increase in availability at Monroe Unit 2 will result in an actual increase in generation as compared to baselines. The model’s wide prediction intervals demonstrate that the Rothman model lacks “fit” on this issue. Prediction intervals are measures of uncertainty. As shown above, the model’s prediction interval means that the model will predict generation with a statistical accuracy of “plus-or-minus” roughly 12% and Monroe Unit 2’s actual generation will likely fall within a range as wide as 24% or more. In other contexts, this lack of precision conceivably could be acceptable. But, when determining whether increased availability at Monroe Unit 2 will result *in fact* in increased generation, the error rate is unacceptably high.

See, e.g., United States v. Valencia, 600 F.3d 389, 424 (5th Cir. 2010), *cert. denied*, 131 S. Ct.

285 (2010) (“relevance and reliability of expert testimony turns upon its nature and the purpose for which its proponent offers it”). That is, the Rothman model will often predict an increase incorrectly. Thus, the model simply will not assist the court in determining a fact in issue.¹²

The inability of the Rothman model to predict accurately increases in generation over baselines can be expressed in terms of statistical significance. As shown by King, the model lacks statistical significance on the relevant issue in this case. Its p-values are much higher than the generally accepted level of 0.05 or even the sometimes accepted 0.10. This flaw renders the model, and the opinions based on it, inadmissible.¹³ *See, e.g., EEOC v. Ethan Allen, Inc.*, 259 F. Supp. 2d 625, 635-36 (N.D. Ohio 2003) (excluding expert testimony under *Daubert* where expert did not adhere to generally accepted threshold of two standard deviations, which represents p-value of 0.05 or lower). Indeed, the Supreme Court case of *General Electric Company v. Joiner* affirmed the district court’s exclusion of expert testimony based on studies lacking statistical significance. *See* 522 U.S. at 144-47.

V. Rothman’s Opinions Do Not “Fit” Any Issue Under the 2002 NSR Reform Rules.

The Rothman model is not relevant for a second reason. Detroit Edison cannot be liable unless its *actual* emissions exceed its baseline emissions by a significant amount.¹⁴ *See*

¹² The Rothman model may arguably be useful to answer other questions, but *Daubert* requires that the proffered opinions be useful to answer the specific question at issue in the litigation, not academic questions.

¹³ Courts have debated whether *Daubert* requires statistical studies to have p-values less than 0.05 or 0.10 to be considered sufficiently reliable to be admissible, but Detroit Edison is not aware of any court that has accepted p-values in the range of the Rothman model. *See, e.g., Novo Nordisk A/S v. Caraco Pharm. Labs.*, --- F. Supp. 2d ----, 2011 WL 163996 n.20 (E.D. Mich. Jan. 19, 2011) (“Statistical analyses that result in ‘p’ values of 0.05 or less are, by accepted standards, considered statistically ‘significant,’ while values greater than 0.05 are not.... The p-value is a value that statisticians use to show the uncertainty in the results of a study.”).

¹⁴ “Significant emissions increase” is just one element of Plaintiff’s liability case against Detroit Edison. In addition, Plaintiff must prove that the tube projects were not routine

Defendants' Brief in Support of Motion for Summary Judgment Based on the 2002 NSR Reform Rules (Doc. No. 107). Dr. Rothman's predictive model says nothing about *actual* emissions. Rather, the model attempts only to *predict* the range of generation at Monroe Unit 2 (within a range of approximately 24%) for a given availability. Even if the Rothman model's wide range of possible outcomes were precise enough to predict a significant emissions increase (they are not), those predictions do not establish actual, observed emissions as required by Michigan NSR rules to establish liability. *See Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039 (8th Cir. 2000) (error to admit testimony by an economics professor who used an economic model that was inconsistent with controlling facts and law because the testimony failed the *Daubert* "fit" requirement).

The Michigan NSR rules establish two "source obligations." First, the source must submit its pre-project projection that the project will not cause post-project emissions to increase above baseline levels. Second, the source must conduct post-project monitoring and reporting to confirm the validity of the pre-project projection. MICH. ADMIN. CODE R. 336.2818(3), R. 336.2801(ll)(ii)(A). The Court must decide whether Detroit Edison complied with this process. In answering these questions, though, it is not relevant whether Rothman (or some other witness) criticizes the pre-project projection, and argues that Detroit Edison should have used a different model that might project a significant emissions increase. All that is relevant is whether Detroit Edison complied with the source obligations, and whether the Projects caused an actual increase in emissions irrespective of the projection. Thus, the Rothman model does not meet the requirement of FRE 702 that expert opinion testimony "assist the trier of fact" in "resolving a

maintenance, repair, or replacement, and that the projects caused the significant emissions increase. Plaintiff is not offering Rothman to establish either of these other elements.

factual dispute.” *Daubert*, 509 U.S. at 591 (quoting *United States v. Downing*, 753 F.2d 1224, 1242 (3d Cir. 1985)).

CONCLUSION

For the foregoing reasons, Detroit Edison’s motion should be granted, and the Court should enter an Order excluding the opinions of Edward Rothman.

Respectfully submitted this 5th day of August 2011.

Matthew J. Lund (P48632)
PEPPER HAMILTON LLP
100 Renaissance Center, 36th Floor
Detroit, Michigan 48243
lundm@pepperlaw.com
(313) 393-7370

Michael J. Solo (P57092)
DTE ENERGY
One Energy Plaza
Detroit, Michigan 48226
solom@dteenergy.com
(313) 235-9512

/s Harry M. Johnson, III
F. William Brownell
brownell@hunton.com
Mark B. Bierbower
mbierbower@hunton.com
Makram B. Jaber
mjaber@hunton.com
Hunton & Williams LLP
2200 Pennsylvania Avenue, NW
Washington, D.C. 20037
(202) 955-1500

Harry M. Johnson, III
pjohnson@hunton.com
Hunton & Williams
951 E. Byrd Street
Richmond, Virginia 23219
(804) 788-8784

Counsel for Defendants

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing **MEMORANDUM OF LAW IN SUPPORT OF DEFENDANTS' MOTION *IN LIMINE* TO EXCLUDE THE OPINIONS OF EDWARD ROTHMAN** was electronically filed with the Clerk of Court using the CM/ECF system, which will automatically send email notification of such filing to the following attorneys of record as follows:

Ellen E. Christensen
U.S. Attorney's Office
211 W. Fort Street
Suite 2001
Detroit, MI 48226
313-226-9100
Email: ellen.christensen@usdoj.gov

James A. Lofton
Thomas Benson
Justin A. Savage
Kristin M. Furrie
Elias L. Quinn
James W. Beers, Jr.
U.S. Department of Justice
Environmental and Natural Resource Div.
Ben Franklin Station
P.O. Box 7611
Washington, DC 20044
202-514-5261
Email: thomas.benson@usdoj.gov
justin.savage@usdoj.gov
kristin.furrie@usdoj.gov
jim.lofton@usdoj.gov
elias.quinn@usdoj.gov
james.beers@usdoj.gov

Holly Bressett
Sierra Club Environmental Law Program
85 Second St., 2nd Floor
San Francisco, CA 94105
Phone: (415) 977-5646
Email: Holly.Bressett@sierraclub.org

This 5th day of August, 2011.

/s/ Harry M. Johnson, III